

## WE CLAIM

1. A method of making a preform for an enhanced photosensitive fiber comprising the steps of:

5 depositing successive layers of optical material the inside a tube using modified chemical vapor deposition; and collapsing the successive layers of optical material in a reducing atmosphere with a positive pressure.

10 2. A method according to claim 1, wherein the positive pressure is 0 to 1.0 torr.

15 3. A method according to claim 2, wherein the positive pressure is 0 to 0.5 torr.

4. A method according to claim 3, wherein the positive pressure is 0.2 to 0.4 torr.

5. A method according to claim 1, wherein the reducing atmosphere comprises GeCl<sub>4</sub>.

15 6. A method according to claim 5, wherein the reducing atmosphere further comprises at least one of He, Ar, CO, COH and 2-propanol.

20 7. A method according to claim 1, wherein the optical material is doped with Ge.

8. A method according to claim 7, wherein the optical material is co-doped with boron.

9. A method of making an enhanced photosensitive fiber comprising the steps of:

PROCEDED PURSUANT TO 35 U.S.C. § 122

making a preform using modified chemical vapor deposition wherein the preform is collapsed in a reducing atmosphere with a positive pressure; and drawing the preform into a fiber.

10. A method according to claim 9, wherein the positive pressure is  
5 0 to 1.0 torr.

11. A method according to claim 10, wherein the positive pressure is  
0 to 0.5 torr.

12. A method according to claim 11, wherein the positive pressure is  
0.2 to 0.4 torr.

13. A method according to claim 9, wherein the step of drawing is  
conducted with a tension of 100 g to 250 g.

14. A method according to claim 13, wherein the step of drawing is  
conducted with a tension of 150 g to 200 g.

15. A method according to claim 14, wherein the step of drawing is  
conducted at a temperature of 1950 C to 2100 C.

16. A method according to claim 15, wherein the step of drawing is  
conducted at a temperature of 1980 C to 2050 C.

17. A method of making a fiber grating comprising the steps of:  
providing an enhanced photosensitive fiber made according to claim 9;  
20 and  
exposing the enhanced photosensitive fiber to ultraviolet light to form a  
grating pattern.

PCT/US2003/03660

18. The method of claim 17, wherein the step of exposing is completed within 15 minutes.

19. The method of claim 18, wherein the step of exposing is completed within 5 minutes.

5 20. The method of claim 19, wherein the step of exposing is completed within 1 minute.

21. The method of claim 20, wherein the step of exposing is completed within half a minute.

10 22. The method of claim 17, wherein the grating pattern forms a fiber Bragg grating.

23. The method of claim 17, wherein the grating pattern forms a long period fiber grating.

23. The method of claim 17, wherein the grating pattern forms a laser stabilization grating.

PCT/US2007/034660